

## A NOVEL NON INVASIVE TECHNIQUE FOR THE EVALUATION OF DETRUSOR MUSCLE RESERVE IN ADULT MALES TO OVERCOME OUTLET RESISTANCE.

### Hypothesis / aims of study

This non-invasive technique would offer adequate data regarding the reserve of Detrusor muscle. This would be of a predictive value to differentiate those with adequate reserve to overcome outflow obstruction and are candidates for conservative management, from those with limited reserve who are amenable for complications, such as retention, and would better be managed by early surgical intervention

### Study design, materials and methods

Twenty adult males <40 years old were subjected to this study. Exclusion criteria were males with known symptomatic or radiologic infra vesical obstruction and/or Maximum flow rate < 15ml/sec or significant post void residual.

All subjects were asked to undergo initial uroflowmetry. They were later asked to void through a specially designed device into the uroflowmeter with a condom catheter fitted to the glans and the outflow tube guided into a height of 10 cm above the level of the symphysis pubis. The procedure was then repeated at increasing heights of 20,30,40,50 and 60 cm at different days. Maximum flow rates were compared for each subject with his own initial maximum flow rate as control. Post voiding residual was assessed after each uroflowmetry study. Again, results were compared to initial recorded residual value.

### Results

All subjects were able to continue the study without apparent difficulty. No complications were observed, with only some difficulty in voiding experienced with the 50 and 60 cm height voids. Initial Qmax ranged between 16 and 38 with a mean of 26.3 ml/sec. Qmax decreased progressively from 26.3 ml/sec at 0 level to 17.7 ml/sec at 60 cm height. The rate of decrease ranged between 0.2 and 1.1 ml/sec for each 10 cm increase of height except for the first 10 cm height which resulted in 6.4 ml/sec decrease of uroflowmetry. PVR progressively and slightly increased with each step of height to a maximum of 51 cm at the 60 cm height.

### Interpretation of results

This novel technique allowed the non-invasive estimation of the Detrusor muscle reserve in adult males with no outlet obstruction. This study is the corner stone for the identification of the basic expected changes of urine flow healthy adult males in response to outlet resistance. In its on-going second phase, performed on male patients with mild to moderate obstruction, a cut-off value will be determined to identify Detrusor muscles starting to decay. In the future, the results of this study would hopefully pick patients with weak Detrusor and outlet obstruction and guide them to early operative intervention before irreversible Detrusor changes take place.

### Concluding message

This non invasive technique should allow the identification of which Detrusor muscle that would be able to overcome outlet resistance without an apparent decay of force.

### Disclosures

**Funding:** None **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Faculty of Medicine Ethics Committee, Alexandria University **Helsinki:** Yes **Informed Consent:** Yes